

REMARKS/ARGUMENTS

Claims 1-9, 11-23, and 29 were previously pending in the application. Claims 5-6, 9, 11, 18-20, and 22-23 are canceled; claims 1, 3-4, 7-8, 12, 21, and 29 are amended; and new claims 30-35 are added herein. Assuming the entry of this amendment, claims 1-4, 7-8, 12-17, 21, and 29-35 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

Claim Rejections

On page 2 of the office action, the Examiner rejected claims 1-2, 4, 11, 13-16, 21, and 29 under 35 U.S.C. 102(b) as being anticipated by Nojima. On page 6, the Examiner rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Nojima. For the following reasons, the Applicant submits that all of the now-pending claims are allowable over Nojima..

Claims 1, 21, and 29

Claim 1 has been amended to clarify that (1) the pilot generator generates a composite signal comprising an input signal and only a single pilot signal having only one frequency component at a time and (2) the error corrector detects cross-modulation distortion signals derived from cross-modulation of the input signal on the single pilot signal within the distorting element. Support for the amendments to claim 1 is found, for example, in Fig. 12, which shows a single pilot signal having a single frequency component. (Note that the phrase "at a time" is added to claim 1 to ensure that the invention of currently amended claim 1 covers frequency-hopping implementations in which the frequency of the single frequency component of the single pilot signal can change over time, as in currently amended claim 12.) The Applicant submits that Nojima does not teach or even suggest the invention of currently amended claim 1.

In Nojima, the composite signal comprises the input signal and a pilot signal with two or more waves of different frequencies. This is significant, because Nojima's system operates based on the intermodulation distortion (IMD) components generated from interactions between the two or more waves of different frequencies within the pilot signal.

In the present invention of currently amended claim 1, on the other hand, there are no IMD components generated from interactions between two or more different pilot frequencies, because, in the present invention, there is only one pilot frequency at a time. Rather, in the present invention, the system operates based on cross-modulation distortion signals of the input signal on the single pilot signal frequency.

Thus, Nojima does not teach or even suggest a pilot generator that generates a composite signal comprising an input signal and only a single pilot signal having only one frequency component at a time. At best, Nojima teaches a pilot generator that generates a composite signal comprising an input signal and a pilot signal having two or more frequency components at a time.

In rejecting previously pending claim 1, the Examiner stated, on page 4, "There is no specific definition of cross modulation" and "applicant just does not define the term cross-modulation." The Applicant does not understand these statements by the Examiner because previously pending claim 1 contained an explicit definition of the term cross-modulation. Perhaps, the Examiner was referring to an earlier version of claim 1 which did not include such an explicit definition. (Note that, on page 4, the Examiner refers to claim 24, which had been previously canceled in response to an earlier office action.)

On page 6, the Examiner acknowledged that "Applicant adds one definition of cross-modulation of the input signal but the claims do not limit this to the only interpretation as the claims do not say that this 'only means'. Other interpretations can also apply. The examiner contends that the prior art has such a feature and no evidence has been provided showing otherwise." Based on these statements, the Applicant assumes that the Examiner believes that the IMD components described in Nojima are a type of cross-modulation distortion signal.

Significantly, however, claim 1 does not just recite "cross-modulation distorting signals"; claim 1 also explicitly recites that the cross-modulation distortion signals are "derived from cross-modulation of the input signal on the single pilot signal." Even if Nojima's IMD components could be said to be a type of cross-modulation distortion signal (which the Applicant does not necessarily admit), the fact remains that Nojima's IMD components cannot be said to result from "cross-modulation of an input signal on a pilot signal," because, in Nojima, the input signal has nothing to do with the generation of Nojima's IMD components, which are explicitly defined in Nojima based only on the frequencies of the different pilot waves. See, e.g., Fig. 2, which shows two pilot waves having frequencies f_{p1} and f_{p2} and two IMD components having frequencies $2f_{p1}f_{p2}$ and $2f_{p2}f_{p1}$. Thus, Nojima's IMD components cannot be said to be an example of the cross-modulation distortion signals of currently amended claim 1 as that term is explicitly defined and used in the specification.

For all these reasons, the Applicant submits that currently amended claim 1 is allowable over Nojima. For similar reasons, the Applicant submits that currently amended claims 21 and 29 are allowable over Nojima. Since the rest of the claims depend variously from claims 1, 21, and 29, it is further submitted that those claims are also allowable over Nojima.

Claims 7, 30, and 33

According to claims 7, 30, and 33, the single pilot signal is derived from the input signal. Nojima does not teach or even suggest a system in which the pilot signal is derived from the input signal. As such, the Applicant submits that this provides additional reasons for the allowability of claims 7, 30, and 33 (and also claims 8, 31, and 34) over Nojima.

Claims 8, 31, and 34

According to claims 8, 31, and 34, the single pilot signal is a frequency translated version of a frequency component in the input signal. Since Nojima does not teach or even suggest such a feature, the Applicant submits that this provides additional reasons for the allowability of claims 8, 31, and 34 over Nojima.

Claims 12, 32, and 35

According to claims 12, 32, and 35, the frequency of the single pilot signal is frequency hopped. Since Nojima does not teach or even suggest such a feature, the Applicant submits that this provides additional reasons for the allowability of claims 12, 32, and 35 over Nojima.

Conclusion

For the reasons set forth above, the Applicant respectfully submits that the rejections of claims under Sections 102(b) and 103(a) have been overcome. Furthermore, new claims 30-35 patentably define over Nojima.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

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